

## **REMARKS**

Reconsideration and allowance of the subject application are respectfully requested.

Claims 31-41 are pending.

### **Section 112, First Paragraph Rejection**

Claims 31-41 stand rejected under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement. Applicants respectfully traverse.

#### *Claim 31 Issues Raised*

##### *Fig. 6B Issue*

The Examiner states on page 3 of the Final Office Action:

Applicant alleges that there are no "internals" to be shown for the steps shown as blocks in Fig. 6B. The Examiner disagrees because Applicant himself admits that his application has a similar disclosure as application 90/475,309, and the latter provides extensive description of the internals, for example, of the Polynomial block (see section 2 above).

Again the Examiner is arguing about the disclosure associated with Fig. 6B of the present application. This is not proper under Section 112, first paragraph. Under Section 112, first paragraph the Examiner should be alleging what **claim limitation** is not enabled. The Examiner instead appears to be arguing that applicants have not described Fig. 6B well enough for him to understand the optimization process of Fig. 6B.

As stated before, claim 31 is not limited in its “performing an optimization process” step to the optimization process of Fig. 6B. Instead, as has been previously pointed out, the “optimization process” of claim 31 may read on the well-known optimization process provided by Moore et al. in their article entitled “FORMAOSA-B: A BOILING WATER REACTOR IN-CORE FUEL MANAGEMENT OPTIMIZATION PACKAGE,” which discloses a full three-dimensional BWR (boiling water reactor) simulator with optimization by simulated annealing.

*The Examiner Asserts That Claim 31 Does Not Disclose a Target or Standard to be Achieved*

Claim 31 recites “performing an optimization process”, and as described above, the optimization process may be, for example, the optimization process of Fig. 6B or the well-known FORMOSA-B optimization process. Claim 31 does not recite optimizing a particular thing; instead, claim 31 reads on the performance of the optimization process to optimize whatever such optimization processes are routinely used to optimize. Surely the Examiner is not suggesting that those skilled in the art do not know what the well-known FORMOSA-B optimization process is used to optimize. The Examiner appears to be confusing enablement with simple claim breadth.

*The Examiner Asserts that the Disclosure Does Not Support Performing an Optimization Process Based Alone on the Set Point Data*

The Examiner states that he raises this issue in relation to the previous issue. More pointedly, the Examiner states on page 4 of the Final Office Action that “[o]ne cannot optimize a parameter (e.g., set point data) if the target or goal of the optimization is not identified.” Claim 31 does **not** recite optimizing set point data, and as pointed out above, Claim 31 recites “performing an optimization process on one of a computer and computer network based on the received state-point data to generate one or more optimized independent control variable values.” Previously known optimization processes such as FORMOSA-B have not been run using received state-point data of an operating nuclear reactor as claimed, and supported by the originally filed application.

*The Examiner Asserts that the Description is Inadequate or Non-Enabling for a) the Number of Independent and Dependent Variables, b) Which of the Variables are Considered in the Analysis, c) What Weights are Assigned to the Variables, and d) How are the Variables Considered in the Analysis*

On this point, the Examiner states on page 4 of the Final Office Action: Applicant alleges that the optimization processes are already well known, that there are comprehensive lists of control variables and dependent variables available, and that there are numerous references in the submitted IDS to provide teachings for the process. Given the Applicant's admission of a plurality of available teachings in the art, the issue is the lack of criteria for selecting an appropriate process or set of variables, and for modification of what has been selected to fit the Applicant's situation.

appropriate process or set of variables, and for modification of what has been selected to fit the Applicant's situation.

Surely the Examiner must realize that the selections the Examiner is referring to are well within the purview of one skilled in the art – a reading of the FORMOSA-B article should bare this out. The Examiner will also appreciate from this article that the selections will depend on the nuclear reactor that is the subject of the optimization process.

*The Examiner Asserts the Preamble and Claim Body are Not Consistent*

To help further clarify this issue, the preamble of claim 31 now recites “A method of determining independent control variable values”, and the performing an optimization process step now recites generating “one or more independent control variable values.” The preamble is entirely consistent with the body of the claim. And, the Examiner will appreciate from the discussion above and from reading the FORMOSA-B article that independent control variables (e.g., control rod pattern) are generated as part of the FORMOSA-B optimization process.

*Claim 32 Issues*

As stated above with respect to claim 31, the Examiner’s concerns regarding claim 32 are unfounded as one skilled in the art would know the processes to select and modify to fit applicant’s situation.

### *Claims 33 and 34*

Applicants demonstrated in the previously filed response that the claim language of claims 33 and 34 reads on the originally filed disclosure. That is all that Section 112, first paragraph requires.

The Examiner now appears on a mission to have applicants' restrict their claims to the exact examples given in the specification. The Patent Office and the courts have long ago recognized that this policy would lead to book length specifications in order to support broad claims. Instead, it has been recognized that a disclosure need only provide examples that support the breadth of a claim. The applicants have demonstrated that support for the claim language of claims 33 and 34 exists – that is sufficient to meet the requirements of Section 112, first paragraph.

### *Claims 37-39 Issues*

The Examiner states on page 5 of the Final Office Action that "there are no criteria for selection of the set of data display", and as such claims 37, 38 and 39 are not supported.

As explained in the last response, in one instance the specification teaches that the user may select portions of the optimization data base to view over a graphical user interface (GUI). Because the optimization data includes the state-point data, the user also controls what portion thereof is viewed. As another example, the specification teaches viewing the optimization output results.

The specification teaches in at least one instance that the user determines which data to display - this is clear criteria.

*Claims 40 and 41 Issues*

Claims 40 and 41 read on an optimization process recited in the specification and illustrated in Fig. 6B. Each and every step of claims 40 and 41 reads on the originally filed disclosure, and one skilled in the art would have been able to make and use the invention claimed in claims 40 and 41 based on this disclosure. Fig. 6B discloses example steps in this optimization process, and the specification discloses each step in such detail that one skilled in the art would be able to practice that step. Applicants recognize that while one skilled in the art is enabled by this disclosure, that does not mean it is readily understandable for the Examiner. If the Examiner is unable to understand a particular step, the undersigned would be more than happy to show the Examiner where that step is described in detail in the specification and help him through any problems he may be having in understanding that description.

In view of the above, applicants respectfully request that the Examiner withdraw the Section 112, first paragraph rejection of claims 31-41.

## **Section 112, Second Paragraph Rejection**

The Examiner rejects claims 31-41 under 35 U.S.C. 112, second paragraph for the reasons stated above in the Section 112, first paragraph rejection. For the reasons set forth above, applicants respectfully request that the Examiner withdraw this rejection.

## **Art Grounds of Rejection**

Claims 31-39 stand rejected under 35 USC 102(b) as being anticipated by Takeuchi or Musick. Applicants respectfully traverse these art grounds of rejection.

### *Takeuchi*

In Takeuchi, current reactor data may be fed to an expert system 20 such as shown in Figure 1. The expert system 20 operates according to a process shown in Figure 2. Figure 2 is a flow chart showing that the expert system determines if the reactor is operating in an abnormal condition. If so, the expert system 20 determines if there is evidence of a reactor scram. Based on this determination, diagnostics are performed. What is clear from Takeuchi is that no optimization process is performed. As such Takeuchi does not disclose or suggest “performing an optimization process on one of a computer and computer network based on the received state-point data to generate one or more optimized independent control variable values” as recited in claim 31.

The Examiner states on page 7 of the Final Office Action:

Clearly, Takeuchi et al.'s expert system provides some optimization of reactor operation because it ensures that the plant provides information, e.g., to an operator to maintain the plant within the specified limits and avoid costly recovery from abnormal conditions.

The Examiner is suggesting that discovery of a reactor scram situation, which then causes a human operator to take some corrective action is the same as optimization of the nuclear reactor. The Examiner statement is like saying a fire alarm that notifies the fire department to come put out a fire clearly provides a fire dousing operation. Discovery of a reactor problem is not optimization.

#### *Musick*

Musick is directed to a supervisory apparatus that attempts to ensure a reactor is operated within specified limits. Namely, Musick is directed to a protection system. No elements, process, etc. within Musick performs an optimization process. The core protection calculator referred to by the Examiner determines if the reactor exceeds some constraint requiring a control action, for example, needs to be scrammed (See col. 11-12). Reactor scram involves stopping the nuclear reaction; namely, shutting down the nuclear power plant. This is not an optimization process. As such Musick does not disclose or suggest "performing an optimization process on one of a computer and computer network based on the received state-point data to generate one or more optimized independent control variable values" as recited in claim 31.

Claims 32-39, dependent on claim 31, are patentable at least for the reasons stated above with respect to claim 31 as well as on their own merits.

Claims 40-41 stand rejected under 35 U.S.C. 102b as being anticipated by Takeuchi. Applicants respectfully traverse this art grounds of rejection.

As discussed above, Takeuchi does not anticipate or render claim 31 obvious to one skilled in the art. Therefore, claims 40-41, dependent on claim 31, are patentable at least for the reasons stated above with respect to claim 31 as well as on their own merits.

Claims 40 and 41 also stand rejected under 35 U.S.C. 103 as being unpatentable over Musick in view of Takeuchi. Applicants respectfully traverse this art grounds of rejection.

As discussed above, Takeuchi and Musick do not anticipate or render claim 31 obvious to one skilled in the art. Therefore, claims 40-41, dependent on claim 31, are patentable at least for the reasons stated above with respect to claim 31 as well as on their own merits.

## **CONCLUSION**

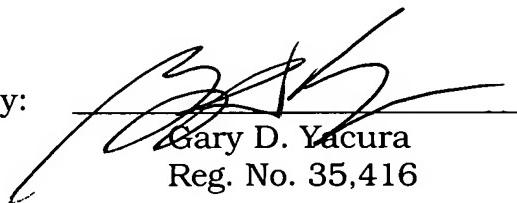
Accordingly, in view of the above amendments and remarks, an early indication of the allowability of each of claims 31-41 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

By:



Gary D. Yacura  
Reg. No. 35,416

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. Box 8910  
Reston, VA 20195  
(703) 668-8000  
GDY